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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,221	11/15/2005	Paulo Cavalcanti Gomes Ferreira	265833US0X PCT	8194

22850 7590 05/24/2010

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EXAMINER	
COLLINS, CYNTHIA E	

ART UNIT	PAPER NUMBER
1638	

NOTIFICATION DATE	DELIVERY MODE
05/24/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/526,221	FERREIRA ET AL.	
	Examiner	Art Unit	
	Cynthia Collins	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 February 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,8-14,16-24,30,31,34,35 and 38-40* is/are pending in the application.

4a) Of the above claim(s) *30 and 31* is/are withdrawn from consideration.

5)☒ Claim(s) *1-5,8-14,16,18-20,34,35 and 38-40* is/are allowed.

6)☒ Claim(s) *17 and 21-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's submission filed on February 12, 2010 has been entered.

Claims 6-7, 15, 25-29, 32-33 and 36-37 are cancelled.

Claims 11-14, 16-18, 20-21 and 34-35 are currently amended.

Claims 30-31 are withdrawn, currently amended.

Claims 1-5, 8-14, 16-24, 30-31, 34-35 and 38-40 are pending.

Claims 1-5, 8-14, 16-24, 34-35 and 38-40 are examined.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

All previous objections and rejections not set forth below have been withdrawn.

Election/Restrictions

Applicants' request that the claims of any nonelected group which depend from or otherwise include all the limitations of an allowed elected claim, be rejoined upon an indication of allowability for the elected claim, is acknowledged (reply page 9).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 21-24 remain rejected, and claim 17 is rejected, under 35 U.S.C. 102(b) as being anticipated by Hemerly A. et al. (WO 01/02430, published 11 January 2001), for the reasons of record.

Claims 21-23 are drawn to a genetic construct comprising: a nucleic acid sequence encoding a CDC27A protein that is at least 95% homologous to SEQ ID NO: 2, including a genetic construct wherein said nucleic acid is a *cdc27a* nucleic acid sequence obtained from a dicotyledonous plant, and a genetic construct wherein said control sequence is a constitutive promoter or at least a part thereof.

Claim 24 is drawn to a plant or plant part comprising the genetic construct according to claim 21, wherein said plant or plant part has changed or accelerated development.

Claim 17 is drawn to a transgenic plant obtained by the method according to claim 1, or its progeny, wherein said plant has a modified phenotype selected from the group consisting of increased plant organ size, increased numbers of a plant organ, and earlier flowering, compared to a plant obtained from the corresponding untransformed plant cell.

Hemerly A. et al. teach a method comprising introducing into a plant a nucleic acid sequence that is a cdc27a nucleic acid obtained from the dicotyledonous plant *Arabidopsis thaliana*, including a method wherein said nucleic acid sequence is introduced in a sense direction into a plant, a method wherein expression of said nucleic acid is driven by a constitutive promoter, and a method comprising the introduction into a plant of a construct (pages 26-29; claims 15-16 and 22-26).

Hemerly A. et al. also teach plants obtained by their methods including monocotyledonous plants and plants such as rice, maize, wheat, barley, soybean, leguminosae,

rapeseed, sunflower, canola, sugarcane, and cotton, and a plant part, propagule or progeny (pages 26-29; claims 15-16 and 22-26).

Hemerly A. et al. additionally teach drawn to a genetic construct comprising, a nucleic acid sequence that is a cdc27a nucleic acid obtained from the dicotyledonous plant *Arabidopsis thaliana* and one or more control sequence capable of regulating expression of the nucleic acid sequence in a plant, including a construct wherein said control sequence is a constitutive promoter or at least a part thereof, and a plant or plant part comprising said genetic construct (pages 26-29; claims 15-16 and 22-26). These constructs contain non-endogenous or non-native control sequences, e.g. the regulatory elements "may be heterologous or homologous with respect to the nucleic acid molecule to be expressed as well with respect to the plant species to be transformed" (page 27 lines 28-31), and the regulatory elements can be non-endogenous or non-native control sequences such as the 35S promoter of CaMV (page 27 lines 34-35) or the chemically inducible Tet-system (page 28 lines 7-8).

The plants taught by Hemerly A. et al. have changed development in that DNA replication and mitosis are altered in their cells as a consequence of their transformation. Alternatively, the plants taught by Hemerly A. et al. have changed development since the recited changes in plant development are merely the end result of practicing the methods as claimed (see, for example, page 1 lines 1-4 of the specification). Accordingly Hemerly A. et al. need not explicitly teach these limitations since they are inherent end results of producing plants using the methods as claimed.

Further, while Hemerly A. et al. do not explicitly teach that their methods are intended to change development of a plant or plant part or for the production of a transgenic plant having

changed development, Hemerly A. et al. need not explicitly teach these limitations as the references to changing the development of a plant or plant part and the production of a transgenic plant having changed development recited in the claim preambles may be interpreted as intended uses of the claimed methods that are not specifically limiting. Alternatively, since the recited changes in plant development are merely the end result of practicing the methods as claimed (see, for example, page 1 lines 1-4 of the specification) Hemerly A. et al. need not explicitly teach these limitations since they are inherent end results of practicing the methods as claimed.

The cdc27a nucleic acid taught by Hemerly encodes an amino acid sequence having at least 95% sequence identity with SEQ ID NO:2.

```
RESULT 1
AAB68952
ID   AAB68952 standard; peptide; 728 AA.
XX
AC   AAB68952;
XX
DT   24-JUL-2008  (revised)
DT   15-JUN-2007  (revised)
DT   18-APR-2001  (first entry)
XX
DE   Arabidopsis thaliana CDC27A1 protein.
XX
KW   Cell cycle regulation; DNA replication; CDC7; CDC27A1; CDC27A2; CDC27B;
KW   nematode resistance; endoreduplication; sterility; polyploidy.
XX
OS   Arabidopsis thaliana.
XX
PN   WO200102430-A2.
XX
PD   11-JAN-2001.
XX
PF   05-JUL-2000; 2000WO-EP006401.
XX
PR   05-JUL-1999;   99EP-00202214.
XX
PA   (CROP-) CROPDESIGN NV.
PA   (UYRI-) UNIV RIO DE JANEIRO.
XX
PI   Hemerly AS,  Ferreira PCG,  Rombauts S;
XX
DR   WPI; 2001-123101/13.
XX
PT   Partially purified plant CDC27 or CDC7 protein homolog, useful for
PT   modulating DNA replication and for producing transgenic plants.
XX
PS   Claim 3; Page 72-74; 86pp; English.
XX
CC   The present invention provides the protein and coding sequences of
CC   several Arabidopsis thaliana proteins which are involved in DNA
CC   replication and the regulation of the cell cycle. These include CDC7,
CC   CDC27A1, CDC27A2 and CDC27B. They are useful in the production of
CC   transgenic and mutant plants, as the mutations in the gene cause proteins
CC   to confer nematode resistance, sterility and polyploidy on plants and
CC   also lead to endoreduplication
CC
CC   Revised record issued on 24-JUL-2008 : Enhanced with precomputed
CC   information from BOND.
XX
SQ   Sequence 728 AA;
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  Query Match           100.0%;  Score 3793;  DB 4;  Length 728;
  Best Local Similarity  100.0%;  Pred. No. 0;
  Matches  728;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 MMENLLANCVQKNLNHFMFTNAIFLCELLLAQFPSEVNLQLLARCYLSNSQAYSAYYLLK 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MMENLLANCVQKNLNHFMFTNAIFLCELLLAQFPSEVNLQLLARCYLSNSQAYSAYYLLK 60

Qy         61 GSKTPQSKYLFAFSCFKLDLLGHAEAALLPCEDYAEEVPGCAAGHYLLGLLYRYSGRKNC 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 GSKTPQSKYLFAFSCFKLDLLGHAEAALLPCEDYAEEVPGCAAGHYLLGLLYRYSGRKNC 120

Qy        121 SIQQFRMALSFDPLCWEAYGELCSLGAAEEASTVFGNVASQRLQKTCVEQAISFSEGATI 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 SIQQFRMALSFDPLCWEAYGELCSLGAAEEASTVFGNVASQRLQKTCVEQAISFSEGATI 180

Qy        181 DQITDSDKALKDTGLSQTEHIPGNQQDLKIMQQPGDIPPNTDRQLSTNGWDLNTPSPVL 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        181 DQITDSDKALKDTGLSQTEHIPGNQQDLKIMQQPGDIPPNTDRQLSTNGWDLNTPSPVL 240

Qy        241 LQVMDALPPLLLKNMRRPAVEGSLMSVHGVRVRRANFFSEELSAEAQRESGRRRSARIAA 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        241 LQVMDALPPLLLKNMRRPAVEGSLMSVHGVRVRRANFFSEELSAEAQRESGRRRSARIAA 300

Qy        301 RKKNPMSQSFGKDSHWLHLSPSESNYAPSLSSMIGKCRIQSSKEVIPDTVTLNDPATTSG 360
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        301 RKKNPMSQSFGKDSHWLHLSPSESNYAPSLSSMIGKCRIQSSKEVIPDTVTLNDPATTSG 360

Qy        361 QSVSDIGSSVDDEEKSNPSESSPDRFSLISGISEVSLLKILGDGHRHLHMYKCQEALLA 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        361 QSVSDIGSSVDDEEKSNPSESSPDRFSLISGISEVSLLKILGDGHRHLHMYKCQEALLA 420

Qy        421 YQKLSQKQYNTHWVLMQVGKAYFELQDYFNADSSFTLAHQKYFYALSGMDTYSTVLYHLK 480
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        421 YQKLSQKQYNTHWVLMQVGKAYFELQDYFNADSSFTLAHQKYFYALSGMDTYSTVLYHLK 480

Qy        481 EEMRLGYLAQELISVDRLSPESWCAVGNCYSLRKDHDTALKMFQRAIQLNERFTYAHTLC 540
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        481 EEMRLGYLAQELISVDRLSPESWCAVGNCYSLRKDHDTALKMFQRAIQLNERFTYAHTLC 540

Qy        541 GHEFAALEEFEDAERCYRKALGIDTRHYNAWYGLGMTYIAQEKFEFAQHQFQLAIQINPR 600
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        541 GHEFAALEEFEDAERCYRKALGIDTRHYNAWYGLGMTYIAQEKFEFAQHQFQLAIQINPR 600

Qy        601 SSVIMCYYGIALHESKRNDEALMMMEKAVLTDAKNPLPKYYKAHILTSLGDYHKAQKVLE 660
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        601 SSVIMCYYGIALHESKRNDEALMMMEKAVLTDAKNPLPKYYKAHILTSLGDYHKAQKVLE 660

Qy        661 ELKSCAPQHSSVHASLGKIYNQLKQYDKAVLHFGIALDLSPSPSDAVKIKAYMERLILPD 720
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        661 ELKSCAPQHSSVHASLGKIYNQLKQYDKAVLHFGIALDLSPSPSDAVKIKAYMERLILPD 720

Qy        721 ELVTEENL 728
              ||||||||
Db        721 ELVTEENL 728
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Applicants' arguments filed February 12, 2010 have been fully considered but they are not persuasive.

Applicants maintain that the rejection is moot in view of the amendment of the claims to refer to constructs containing non-endogenous or non-native control sequences (reply pages 10-11).

With respect to claims 21-23, the amendment of the claims does not overcome the rejection because Hemerly A. et al. teach constructs containing non-endogenous or non-native control sequences as set forth above.

With respect to claim 24, the amendment of the claims does not overcome the rejection because Hemerly A. et al. teach plants having changed development as set forth above. The amendment of claim 24 to indicate that the plant and plant part have the specific phenotypic characteristics recited in claim 1 would overcome the rejection of claim 24.

With respect to claim 17 as currently amended, because the progeny plants are not required to be transgenic or to exhibit the phenotype of their transgenic parents, and because the progeny of transgenic plants may not be nontransgenic, the progeny plants of claim 17 as currently amended are anticipated by any prior art plant, including those of Hemerly A. et al.. The amendment of claim 17 to indicate that the progeny are transgenic, and to indicate that the progeny exhibit the specific phenotypic characteristics recited in claim 1, would overcome the rejection of claim 17.

Allowable Subject Matter

Claims 1-5, 8-14, 16, 18-20, 34-35 and 38-40 are allowed.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Remarks

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Collins whose telephone number is (571) 272-0794. The examiner can normally be reached on Monday-Friday 8:45 AM -5:15 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on (571) 272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cynthia Collins/
Primary Examiner, Art Unit 1638

CC